101. The cathode of claim 99, wherein the cathode surface is coated with an aluminium-wettable refractory material.

102. The cathode of claim 102, wherein the aluminium-wettable refractory coating comprises refractory hard metal boride.

103. The cathode of claim 102, wherein the aluminium-wettable refractory coating comprises particulate refractory hard metal boride in a colloidal carrier.

104. The cathode of claim 99, wherein said metallization is made from metallic powder(s) applied in an aqueous or non-aqueous liquid, or in an aqueous liquid containing organics, in particular in a polymer, such as polyurethane, ethylene glycol, polyethylene glycol, resins, esters or waxes.

105. The cathode of claim 99, wherein the metallization is an intermetallic compound comprising aluminium and at least one further metal selected from nickel, iron, titanium, cobalt, chromium and zirconium.

106. The cathode of claim 105, wherein said intermetallic compound is NiAl or Ni_3Al.

107. The cathode of claim 99, wherein the cathode surface is covered with at least one additional start-up layer made from at least one pliable foil of aluminium having a thickness of less than 0.1 mm.

108. The cathode of claim 107, wherein said pliable aluminium foil is from 0.03 to 0.05 mm thick.

109. The cathode of claim 107, wherein said pliable aluminium foil is at least partly oxidised and at least partly incorporated into the cathode surface as alumina.

110. The cathode of claim 99, wherein the cathode surface is covered with at least one additional start-up layer consisting of a glassy layer made from a boron-containing solution, in particular containing boron oxide, boric acid or tetraboric acid.

111. The cathode of claim 99, wherein the cathode surface is covered with at least one additional start-up layer made from a polymer or a polymer precursor, such as

polyurethane, ethylene glycol, polyethylene glycol, resins, esters or waxes.

112. The cathode of claim 99, wherein the cathode surface is covered with at least one additional start-up layer made from a solution comprising phosphates of aluminium, such as a phosphate of aluminium selected from monoaluminium phosphate, aluminium phosphate, aluminium polyphosphate, aluminium metaphosphate and mixtures thereof.

113. The cathode of claim 99, wherein the cathode surface is covered with at least one additional start-up layer made from a colloid solution that gels during preheating, such as a colloid selected from colloidal alumina, silica, yttria, ceria, thoria, zirconia, magnesia, lithia, monoaluminium phosphate, cerium acetate or mixtures thereof.

114. The cathode of claim 113, wherein said colloid is at least partly integrated into the cathode surface or into an aluminium-wettable refractory coating on said surface.

115. The cathode of claim 114, wherein said colloid solution contains a particulate conductor, such as aluminium, nickel, iron, titanium, cobalt, chromium, zirconium, copper or a combination thereof.

116. The cathode of claim 99, wherein the cathode surface is covered with at least one additional start-up layer containing carbides and/or borides of metals, in particular of metals selected from the group comprising aluminium, titanium, chromium, vanadium, zirconium, hafnium, niobium, tantalum, molybdenum and cerium.

117. The cathode of claim 99, wherein at least one start-up layer comprises particulate aluminium.

118. The cathode of claim 99, wherein said one or more start-up layers are covered with at least one thick sheet of aluminium having a thickness of 1 to 5 mm.

119. An aluminium electrowinning cell which can be used to produce aluminium upon start-up, comprising a cathode having a cathode surface covered with one or more start-up layers as defined in claim 99.

120. The cell of claim 119, wherein said one or more start-up layers are electrically conductive, the start-up layer(s) being covered with a layer of electrically conductive material, so that heat can be generated during start-up by passing electric current via anodes, through the conductive material and the conductive start-up layer(s) into the cathode.

121. The cell of claim 120, comprising a relatively thick sheet or sheets of aluminium, from 1 to 5 mm thick, between each anode and the start-up layer(s).

122. The cell of claim 120, wherein said conductive material contains coke.

123. The cell of claim 119, comprising burners for start-up by flame preheating.

124. The cell of claim 119, comprising means to generate infrared radiation for preheating during start-up.

125. The cell of claim 119, wherein the cathode comprises an aluminium-wettable refractory coating protected by at least one start-up layer that is covered with a fluoride-based electrolyte having a point of fusion in the region 660°-760°C.

126. The cell of claim 125, wherein said fluoride-based electrolyte is mixed with or covers a layer of conductive material such as coke.

127. The cell of claim 119, which comprises sidewalls, the start-up layer(s) extending up the side walls.

128. The cell of claim 119, having an electrolyte level during normal use, the start-up layer(s) extending above said level.

129. The cell of claim 119, comprising an oxygen-evolving non-carbon anode.

130. The cell of claim 119, wherein the cathode is aluminium-wettable and in a drained configuration.